

Overcoming aridity? The role of irrigation on the Spanish agricultural production during the second half of the 20th century

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Abstract: From the second half of the twentieth century, the Spanish agricultural sector experienced a sustained growth in production, which involved the convergence to Western European levels after years of delay in terms of agricultural production and productivity. This sustained growth stopped in the mid-1980s in the European continent.

Production moved to the warm and sunny provinces in the south and east of the country that tended to produce high valued crops oriented to foreign markets as fruits, vegetables and olive oil. Scientific literature has pointed to several factors influencing this process. Some of them are technological innovations, the internationalization of the Spanish agriculture, the internal development of Spain and its subsequent dietary changes, and the development of irrigation. The analysis period, the second half of the twentieth century, involves considering the construction of the Franco's hydraulic infrastructures, the integration of the Spanish agriculture into the international markets and the massive implementation of technological changes.

In this framework, the main objective of this paper will be to study the influence of irrigation in the Spanish agricultural production, deepening into the generation of regional divergences during the second half of the twentieth century. Thus, we will evaluate the essential role of irrigation, which allowed growing Mediterranean water intensive crops in the most arid areas of the country.

As the main data source of the study, we will use the *Anuarios de Estadística Agraria* (Agricultural Statistics Yearbook) elaborated by the Ministry of Agriculture that include 132 crop products and 48 provinces from 1955 to the beginning of the

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twentieth-first century. Additionally, irrigation data at the provincial level stem from the Historical Irrigation Dataset.

Methodologically, we will try to establish the quantitative long-term relationship between the regional irrigated area and the regional agricultural production using panel data econometrics. Trying to isolate the particular effect of irrigation on agricultural production, the different specifications of our model will also include explicative factors to control for the intensification of the crops, (as well as other geographical, technological, institutional, economic and social transformations occurred during the period of analysis. The level of disaggregation, in terms of production and regions, will allow to evaluate the robustness of our findings, as well as to define specific regional and crop patterns. This study will also shed light on the environmental impacts of the intense and regionally divergent development of water infrastructures in Spain.

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